****

Robust Software Engineering

COURSE ON VERIFICATION AND VALIDATION OF ADAPTIVE SYSTEMS

HIGHLIGHT: Johann Schumann of the Reliable Software Engineering (RSE) group, also a contributor to the ETDP ISD project, was invited to teach a five-day course titled *Verification and Validation of Adaptive Systems* as part of the ten-week lecture series *Sixth Semester of UNESCO Chair: Discrete Mathematics*, held in Tunis, Tunisia.

BACKGROUND: Adaptive and learning systems are found today in many safety-critical areas (e.g., aircraft, automotive industry, chemical and nuclear industry). Often based on neural networks, such systems provide advanced data analysis and control capabilities in the face of change (e.g., to control a damaged aircraft). Due to their nonlinear and dynamic nature, however, verification and validation of such systems present substantial challenges and require novel methods and tools. This course provided a background on the basic principles of artificial neural networks and machine learning systems and their applications, in particular in safety-related areas, as well as detailed information on methods and tools for the verification and validation of such systems.

PROGRAM FUNDING: The course material was developed based upon Schumann's earlier research activities and work done within the NASA Intelligent Flight Control System (IFCS) project.

POC: Joe Coughlan, joseph.c.coughlan@nasa.gov

****